

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

**FLOOR MATERIAL**

Patent Number: JP6146553  
Publication date: 1994-05-27  
Inventor(s): INOUE MINORU; others: 01  
Applicant(s):: DAIKEN TRADE & IND CO LTD  
Requested Patent: ☐ JP6146553  
Application Number: JP19920317769 19921102  
Priority Number(s):  
IPC Classification: E04F15/04  
EC Classification:  
Equivalents: JP2550466B2

**Abstract**

**PURPOSE:**To enable execution having excellent accuracy without a stepped section and a clearance between adjacent floor materials.

**CONSTITUTION:**When a fitting projecting edge section 2 is formed on one side end face of a rectangular floor-material main body 1, in which an elastic material 4 is stuck onto the underside, while a fitting groove 3 having an upward opening, into which the fitting projecting edge section 2 can be inserted, is shaped to the other side end face and the fitting projecting edge sections 2 and fitting grooves 3 of the adjacent floor-material main bodies 1, 1 are fitted mutually, engaging end faces 2a formed to the front end faces of the fitting projecting edge sections 2 and engaging grooves 3a formed on one side wall surfaces of the fitting grooves 3 are connected mutually. The engaging end faces 2a and the engaging grooves 3a are connected positively by the elastic force of the elastic material 4 stuck onto the undersides of the floor-material main bodies 1 and the top faces of the floor-material main bodies 1, 1 are shaped at the same level while engaging grooves 2b shaped to the undersides of the base end sections of the fitting projecting edge sections 2 are fitted and retained to engaging projections 3b protruded at the other side ends of the fitting grooves 3, thus preventing the generation of a clearance between the floor-material main bodies 1, 1.

Data supplied from the esp@cenet database - I2

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平6-146553

(43) 公開日 平成6年(1994)5月27日

(51) Int.Cl.<sup>5</sup>

E 0 4 F 15/04

識別記号

庁内整理番号

F I

技術表示箇所

F 7805-2E

B 7805-2E

審査請求 有 請求項の数 1 (全 5 頁)

(21) 出願番号 特願平4-317769

(22) 出願日 平成4年(1992)11月2日

(71) 出願人 000204985

大建工業株式会社

富山県東砺波郡井波町井波1番地の1

(72) 発明者 井上 稔

大阪市北区中之島2-3-18 大建工業株式会社内

(72) 発明者 青木 英一

大阪市北区中之島2-3-18 大建工業株式会社内

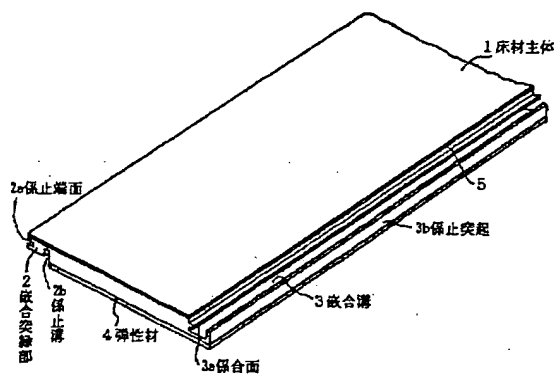
(74) 代理人 弁理士 山本 孝

(54) 【発明の名称】 床 材

(57) 【要約】

【目的】 隣接する床材間に段差や目隙を生じさせることなく精度のよい施工が可能な床材を提供する。

【構成】 下面に弾性材4を貼着している長形状の床材主体1の一侧端面に嵌合突縁部2を設ける一方、他側端面に該嵌合突縁部2が嵌め込み可能な上向き開口の嵌合溝3を設けて隣接する床材主体1、1の嵌合突縁部2と嵌合溝3とを互いに嵌合させた際に、嵌合突縁部2の先端面に形成している係止端面2aと嵌合溝3の一侧壁面に形成している係合溝3aとを互いに接合させるようにし、且つ、その接合を床材主体1の下面に貼着している弾性材4の弾力によって積極的に行って床材主体1、1の上面を面一にすると共に、上記嵌合突縁部2の基端部下面に設けている係止溝2bを上記嵌合溝3の他側端に突設している係止突起3bに嵌合、係止させて床材主体1、1間に目隙が発生するのを防止した構造を有する。



## 【特許請求の範囲】

【請求項1】 下面に一定厚みの弾性材を貼着してなる長方形の床材主体の側端縁に上面が床材主体と面一で且つ床材主体よりも厚みが小なる嵌合突縁部を設け、この嵌合突縁部の先端面を傾斜面や実形状等の係止端面に形成すると共に該嵌合突縁部の基端部下面に適宜深さの係止溝を設け、一方、床材主体の他側端縁に上記嵌合突縁部が嵌合可能な断面形状を有する上向き開口の嵌合溝を設けると共に該嵌合溝の側壁面に上記係止端面と係合可能な形状を有する係合面を形成し、さらに、この嵌合溝の他側端に前記係止溝が嵌合可能な係止突起を設けていることを特徴とする床材。

## 【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は簡単且つ精度よく施工し得る床材の改良に関するものである。

【0002】

【従来の技術】 従来から、合板などの床下地パネルやコンクリートスラブ等の床下地材上に施工する床材としては、長方形に形成した床材主体の側端縁に雄実部を突設する一方、他側端縁に該雄実部が嵌合可能な雌実部を形成している構造のものが広く知られており、施工に際しては隣接する床材の対向側端縁の雌雄実部同士を互いに係合させながら床下地材上に順次敷設し、釘着或いは接着剤によって固定している。

【0003】

【発明が解決しようとする課題】 しかしながら、上記のような床材では、単に床材の対向側端縁同士を雌雄実部によって本実接合させるように構成しているだけであるから、接合させても床材同士が床下地面に沿って互いに接離する方向に対しては何等の規制を受けることがなく、そのため、作業者の技量や施工面の精度のバラツキ等によって隣接する床材間に目隙や段差が生じ易くて精度の良い施工が困難となるという問題点があった。本発明はこのような問題点を全面的に解消し得る床材の提供を目的とするものである。

【0004】

【課題を解決するための手段】 上記目的を達成するために、本発明の床材は、下面に一定厚みの弾性材を貼着してなる長方形の床材主体の側端縁に上面が床材主体と面一で且つ床材主体よりも厚みが小なる嵌合突縁部を設け、この嵌合突縁部の先端面を傾斜面や実形状等の係止端面に形成すると共に該嵌合突縁部の基端部下面に適宜深さの係止溝を設け、一方、床材主体の他側端縁に上記嵌合突縁部が嵌合可能な断面形状を有する上向き開口の嵌合溝を設けると共に該嵌合溝の側壁面に上記係止端面と係合可能な形状を有する係合面を形成し、さらに、この嵌合溝の他側端に前記係止溝が嵌合可能な係止突起を設けた構造となっている。

【0005】

【作用】 上記構造を有する床材を床下地材上に敷設施工するには、先に床下地材上に貼着した床材の他側端縁に設けている上向き開口の嵌合溝に対して、次に施工する床材の側端縁部を斜め下方に向けた状態にして該側端縁に設けている嵌合突縁部を嵌め込み、該嵌合突縁部を嵌合溝の側壁面に向かって押し込むようにしながら床材を徐々に伏動させると、嵌合突起部の先端係止端面が嵌合溝の側壁面に形成している係合面に当接、係止すると共に嵌合溝の他側端に突設している係止突起に嵌合突起部の基端部下面に設けている係止溝が嵌合する。

【0006】 上記のような手順によって床材を順次施工すると、隣接する床材同士が係止端面と係合面との接合によって上下方向の妄動を互いに阻止しあい、且つ床材主体の下面に貼着している弾性材の弾力によってこれらの係止端面と係合面とが積極的に接合しあつて全ての床材の表面が面一に連なると共に、係止突起と係止溝との嵌合によって床材間の幅方向の移動が拘束され、目隙の発生をなくすることができる。また、床材下面に貼着している一定厚みの弾性材によって床下地材に生じている微小な凹凸部が吸収され、上記係止端面と係合面との接合と相俟って段違い等の発生をなくし得る。

【0007】

【実施例】 次に、本発明の実施例を説明すると、1は一定幅と長さをも有する長方形の床材主体で、合板、パーティクルボード、MDF等の材料から形成されており、その長辺側である側端縁に上面が床材主体1の上面と面一で且つ床材主体1の厚みよりも薄い嵌合突縁部2を全長に亘って一体に形成していると共に、他側端縁には該嵌合突縁部2を反転させた断面形状を有して嵌合突縁部2が嵌合可能な上向き開口の嵌合溝3を一体に設けている。

【0008】 上記嵌合突縁部2は、その先端面を雌実からなる係止端面2aに形成していると共に、床材主体1の側端縁側における基端部には下面から上面近傍部に達する一定幅を有する係止溝2bを全長に亘って形成してある。一方、嵌合溝3は深さが嵌合突縁部2の厚みに等しく形成されていると共に、側壁面を嵌合突縁部2の先端係止端面2aに嵌合可能な雄実からなる係合面3aに形成してあり、さらに他側端縁には上記係止溝2bが嵌合可能な係止突起3bを設けてある。この係止突起3bは、その肉厚を係止溝2bよりも僅かに薄く形成されていると共に、該係止突起3bの内側面によって嵌合溝3の他側壁面を形成しているものである。

【0009】 4は床材主体1の下面に一体に貼着した一定厚みを有するゴム、弾性樹脂シート等よりなる弾性材で、上記嵌合突縁部2の基端部に設けている係止溝2bの開口端縁から上記嵌合溝3の下面に亘って全面的に貼着されているものである。5は床材主体1の上面に貼着した化粧単板、樹脂シート等よりなる表面化粧材で、上記嵌合突縁部2の上面から嵌合溝3の開口内端縁に亘って

全面的に貼着されているものである。

【0010】このように構成した床材を床下地材A上に施工する手順を述べると、まず、図3に示すように、床材の貼り始め部に、床材主体1の嵌合突縁部2の下面側空間を埋めることができる断面形状を有する際根太Bを固定したのち、この際根太B上に床材主体1の嵌合突縁部2を上載させながら該床材主体1を床下地材A上に敷設する。なお、床下地材A上に対する床材主体1の固定は、該床材主体1の下面を適宜な接着剤によって貼着されるが、嵌合溝3の内底面から床下地材Aに釘を打ち込むことによって行ってもよい。

【0011】こうして、際根太Bに沿って複数枚の床材主体1を直列状に施工したのち、該床材列に次の列の床材を敷設する。この施工手順は、図4に示すように、床材主体1をその嵌合突縁部2側が下向きに傾斜した状態にして該嵌合突縁部2を既に敷設した床材主体1の嵌合溝3内に嵌め込み、次いで、嵌合突縁部2を嵌合溝3の係合面3a側に向かって押し進めながら床材主体1を徐々に水平状態となる方向に伏動させて該床材主体1の嵌合突縁部2の先端係止端面2aを嵌合溝3の係合面3aに当接、係止させると共に嵌合溝3の他側端に突出している係止突起3bに嵌合突縁部2の基端部下面に設けている係止溝2bを嵌合させる。

【0012】このようにして先に敷設した床材主体1に次に敷設すべき床材主体1を連結させると、両床材主体1、1は、嵌合突縁部2の先端係止端面2aと嵌合溝3の係合面3aとの接合によって上下方向への妄動が規制されて表面化粧材5、5が面一に連らなると共に、係止溝3bと係止突起3bとの嵌合によって幅方向、即ち、互いに離間する方向への移動が拘束され、従って、両床材主体1、1間に目隙が生じることなく精度のよい施工が可能となるものである。また、床材主体1の下面に貼着している弾性材4によって床下地材Aの表面の微小な凹凸部が吸収される共に係止端面2aに対して係合面3aを該弾性材4の弾力によって積極的に押し付けて段違いが生じるのを防止し得るものである。

【0013】上記手順によって既に敷設した床材列の床材主体1に次の列を構成する床材主体1を床下地材A上に順次貼着施工したのち、図5に示すように、第3列目の床材主体1を施工し、この作業を繰り返して行って床下地材A上に多数の床材列からなる床を形成するものである。なお、施工中においては、先に施工した床材列の嵌合溝3に対して次に施工する床材主体1の嵌合突縁部2を嵌め込んだ状態で長さ方向に摺動させながら床材主体1の長さ方向のズレを調整することができる。又、床の施工後、床周辺部を幅木や釘等で抑えることにより床下地材A上に完全に固定することができる。

【0014】図6は床材主体1に設けている嵌合溝3の変形例を示すもので、上記実施例においては、床材主体1の他端部を適宜な掘削工具によって嵌合溝3に形成し

ているが、この変形例においては床材主体1と同一長さを有するコ字型材13によって形成してなるものである。即ち、コ字型材13は図7に示すように、断面上向きコ字に形成された弾性を有する合成樹脂成形体、又は弾性体を裏面に積層した硬質樹脂や金属成形体よりなり、その一側端縁に上方に向かって突設している立ち上がり片13aを床材主体1の他側端部下面に刻設している細溝1a内に嵌入して該コ字型材13の他側部を床材主体1の幅方向に突出させた状態で取付け、このコ字型材13の他側端縁に上方に向かって突設している立ち上がり片を係止突起3bに形成していると共に、この係止突起3bと床材主体1の他側端部に形成している係合面3a間を嵌合溝3に形成しているものである。なお、上記コ字型材13はその下面が弾性材4の下面と面一となるように取付けられてある。また、このコ字型材13の溝底部及び上記係止突起3bは連続させることなく、図8に示すように、断続的に形成したものであってもよい。

【0015】図9は、床材主体1における雌雄突2a、2bを、先端面を上面から下面に向かって突出方向に傾斜する係止端面21aと、該係止端面21aと略同一角度でもって上端から下端に向かって床材主体1に食い込む方向に傾斜した係合面31aとに形成してなるもので、これらの係止端面21aと係合面31aとを互いに面接触状態で係合する傾斜面に形成したものである。又、別な変形例としては、雌雄突部2a、3aを夫々嵌合突縁部2の先端面中央部と嵌合溝3の内側壁面中央部とに形成することなく、図10に示すように、夫々の下端部に雌雄突部22a、23aを形成しておいてもよい。

【0016】また、嵌合溝3を形成する上記コ字型材13としては、上記図10に示すように、横F字型の型材33を使用し、その水平片部の下面を床材主体1の下面から他側方に延出させた弾性材4に隣接して貼着、一体化させる一方、垂直片部によって嵌合溝3の他側壁面を形成した係止突起3bを形成している。この場合、床材主体1に当接した突起33aに弾性作用を付与しておくと、隣接する床材主体1の嵌合突縁部2との当接面で弾性的に連結され、隙間防止や床鳴り防止、寸法変化の吸収等の効果があり、好ましい。又、このような弾性部材としては、図11に示すように、図6における嵌合溝3の係止係合面3aの凹所に別体の弾性材13bを設けておいてもよい。

【0017】次に、図12、13は別な実施例を示すもので、前述の実施例では長方形の床材であったが、この実施例においては4周に雌雄突1a、1b、1c、1dを有する短冊形の床材主体1の長辺側の対向雌雄突を嵌合させて雁行状に配し、裏面に弾性材4a、4bを貼着していると共に、両端部の床材主体1の裏面長手方向において、一端側には係止溝2bを他端側にはコ字型材13の起立端部が嵌入する細孔1aが設けられ、弾性材4a、4bはその中間に亘って配されてなるものである。本実施例では嵌合突縁部が設けられていない床材同士の縦継部が階段状に形成さ

れていて順次実結合されるので、目すきや浮き上がりが生じにくいという利点がある。

【0018】

【発明の効果】以上のように本発明の床材によれば、床材主体の側端縁に先端面を係止端面に形成し且つ基端部下面に係止溝を設けている嵌合突縁部を一体に設ける一方、該床材主体の他側端縁に上記嵌合突縁部が嵌合可能な嵌合溝を設けると共にこの嵌合溝の側壁面を上記係止端面に係合可能な係合面に、他側壁部を前記係止溝が嵌合可能な係止突起に形成しているの、床下地材上に施工する場合、先に貼着した床材の嵌合溝に次に貼着する床材の嵌合突縁部を嵌め込むと、嵌合突縁部の係止端面と嵌合溝の係合面とが互いに係止して床材の浮き上がりを防止し得る上に、床材主体の下面には弾性材を貼着しているの、該弾性材によって床下地に生じている微小な凹凸部を吸収させることができると共にその弾性力によって上記嵌合突縁部の係止端面が嵌合溝の係合面に積極的に押し付けられ、隣接する床材同士をその上面が互いに面一となるように精度よく接合させることができるものである。

【0019】さらに、嵌合突縁部の基端部下面に設けている嵌合溝が先に貼着している床材主体の他側端縁に突設している係止突起に嵌合、係止して床材同士の幅方向のズレの発生を確実に防止し、目隙が生じるのをなくすることができるものである。このように、先に貼着して床材の嵌合溝に次に貼着する床材の嵌合突縁部を嵌め込むという簡単な操作によって、床材の幅方向の移動を係止溝と係止突起との係合によって拘束することができ、厚さ方向の段違いの発生は床材主体の下面に貼着している弾性材の弾力による係止端面と係合面との係合で防止

でき、従って、床下地材に多少の不陸や施工技術にバラツキがあってもそれを吸収して精度のよい床施工が可能となるものである。又、本発明によると、釘や接着剤を用いて固定しなくても、安定した床仕上げ面が形成でき、熟練を要することなく施工性を向上させることができる。

【図面の簡単な説明】

【図1】本発明床材の斜視図、

【図2】その拡大断面図、

【図3】一列目の床材施工状態を示す簡略断面図、

【図4】二列目の床材施工状態を示す簡略断面図、

【図5】三列目の床材施工状態を示す簡略断面図、

【図6】嵌合溝の別な実施例を示す断面図、

【図7】そのコ字型材の一部斜視図、

【図8】そのコ字型材の変形例を示す斜視図、

【図9】係止端面と係合面との別な形状を示す断面図、

【図10】コ字型材の変形例を示す断面図、

【図11】弾性体の別な構造を示す断面図、

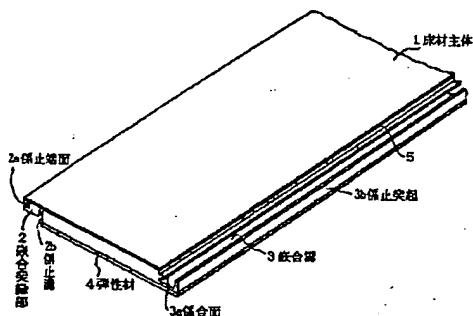
【図12】本発明床材の別な実施例を示す裏面図、

【図13】そのA-A線断面図。

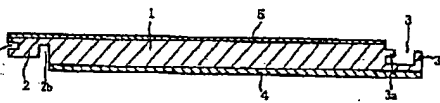
【符号の説明】

- 1 床材主体
- 2 嵌合突縁部
- 2a 係止端面
- 2b 係止溝
- 3 嵌合溝
- 3a 係合面
- 3b 係止突起
- 4 弾性材

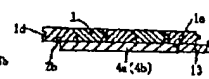
【図1】



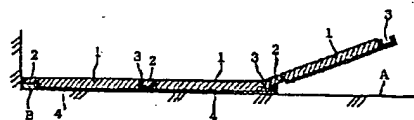
【図2】



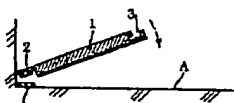
【図13】



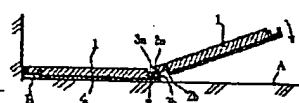
【図5】



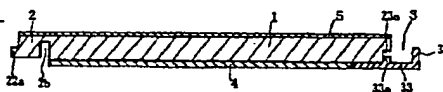
【図3】



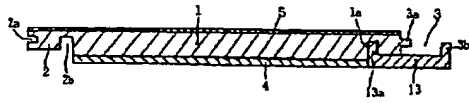
【図4】



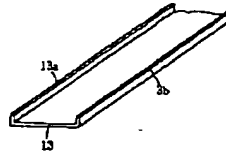
【図10】



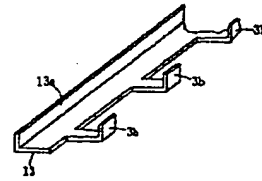
【図6】



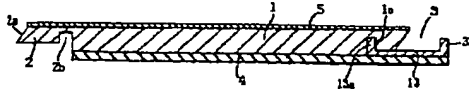
【図7】



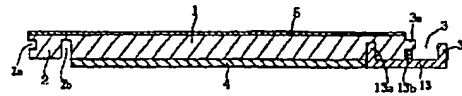
【図8】



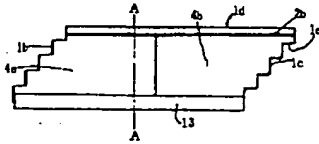
【図9】



【図11】



【図12】



F8b

**English translation of  
the Japanese patent application  
nr. 6-146553**



Japanese Unexamined Patent Publication No. 6-146553

Publication Date: May 27, 1994

Application No.: 4-317769

Application Date: September 2, 1992

Inventors: Inoue et al.

Applicant: Daiken Co., Ltd.

Title of the Invention: FLOOR MATERIAL

[Abstract]

[Object] To provide floor material which can be precisely installed without offsets or steps between adjacent floor material pieces.

[Configuration] A fitting protrusion 2 is provided to one side edge plane of a rectangular main floor material piece 1 with elastic material 4 applied to the lower plane thereof, while on the other hand an upward-facing fitting groove 3 to which the fitting protrusion 2 can be fit is formed on the other side edge plane, such that at the time of joining the fitting protrusion 2 and the fitting groove 3 of adjacent main floor material pieces 1 and 1, the retaining edge plane 2a formed at the tip plane of the fitting protrusion 2 and the fitting groove 3a formed on the one side edge plane of the fitting groove are mutually joined, and the joining there of is aggressively carried out by the elasticity of the elastic material 4 applied to the lower plane of the main floor material pieces 1 and 1 such that the upper

planes thereof form a single plane, while the retaining groove 2b provided to the lower plane of the base edge portion of the fitting protrusion 2 is fit to the retaining protrusion 3b erected on the other side edge of the fitting groove and thus retained, thereby preventing gaps from occurring between the main floor material pieces 1 and 1.

[Claims]

1. Floor material, wherein a fitting protrusion is provided to one side edge of a rectangular main floor material piece formed with an elastic material of a certain thickness applied to the lower plane thereof, such that said fitting protrusion has an upper surface flush with the main floor material piece and has a thickness smaller than that of the main floor material piece, wherein the tip plane of this fitting protrusion is formed into a retaining edge plane such as an inclined plane or a tongue or the like and a retaining groove is provided to the lower plane of the base edge portion of said fitting protrusion to an appropriate depth, while on the other hand a fitting groove opening upwards having a cross-sectional form capable of fitting with said fitting protrusion is formed at the other side edge of the main floor material piece, and an engaging plane having a form capable of engaging with said retaining edge plane is formed on one side wall plane of said fitting groove, and further, a retaining protrusion capable of fitting with said retaining

groove is provided to the other side edge of this fitting groove.

[Detailed Description of the Invention]

[0001]

[Industrial Field of the Invention]      The present invention relates to improvement of floor material which can be easily and precisely installed.

[0002]

[Description of the Related Art]      Conventionally, regarding floor material which is installed on sub-floor panels such as plywood or on a sub-floor material such as a concrete slab, etc., that which is constructed as a rectangular main floor material piece which has a tongue on one side edge plane thereof, while having a groove on the other side edge plane capable of fitting with the tongue, is widely known, and installation thereof is performed by engaging the tongue-and-groove portions on the opposing side edge planes of adjacent floor material pieces and laying these on the sub-floor in a sequential manner, and fixing with nails or adhesive agents.

[0003]

[Problems to be Solved by the Invention]      With floor material such as the above-described, the configuration is for simply joining the opposing side edge planes of the floor material pieces with the tongue-and-groove portions, so even when joined the floor material pieces are not restricted in any way regarding movement over the sub-floor in the direction of

moving away from one another, and accordingly, gaps and offsets between the pieces of floor material occur easily due to irregularities in the skill of the workers and in the precision of the working surface, which has been a problem in that installation with good precision becomes difficult. It is an object of the present invention to provide floor material which is capable of thoroughly solving such problems.

[0004]

[Means for Solving the Problems] In order to achieve the above object, the floor material according to the present invention is of a structure wherein a fitting protrusion is provided to one side edge of a rectangular main floor material piece formed with an elastic material of a certain thickness applied to the lower plane thereof, such that the fitting protrusion has an upper surface flush with the main floor material piece and has a thickness smaller than that of the main floor material piece, wherein the tip plane of this fitting protrusion is formed into a retaining edge plane such as an inclined plane or a tongue or the like and a retaining groove is provided to the lower plane of the base edge portion of the fitting protrusion to an appropriate depth, while on the other hand a fitting groove opening upwards having a cross-sectional form capable of fitting with the fitting protrusion is formed at the other side edge of the main floor material piece, and a engaging plane having a form capable of engaging with the

retaining edge plane is formed on one side wall plane of the fitting groove, and further, a retaining protrusion capable of fitting with the retaining groove is provided to the other side edge of this fitting groove.

[0005]

[Operation] In order to lay and install the floor material having the above structure on a sub-floor, the one side edge portion of the floor material to be installed next is tilted downwards as to the upwards-opening fitting groove provided to the other side edge of the floor material already adhered to the sub-floor material and the fitting protrusion provided on the above one side edge is fit thereto, and gradually laying down the floor material while pressing the fitting protrusion in toward the one side wall plane of the fitting groove causes the tip retaining edge plane of the fitting protrusion to come into contact with the engaging plane formed on the one side wall plane of the fitting groove and be retained, and the retaining groove provided to the lower plane of the base edge portion of the fitting protrusion fits with the retaining protrusion erected on the other side edge of the fitting groove.

[0006]

Sequentially installing the floor material according to the above-described procedures causes the adjacent floor material pieces to mutually inhibit vertical movement due to the joining of the retaining edge plane and the engaging plane, and the

retaining edge plane and the engaging plane are aggressively in contact due to the elasticity of the elastic material applied to the lower plane of the main floor material pieces, so that the surface of all floor material pieces form a continuous single plane, and also the widthwise movement between the floor material pieces is restricted by the fitting of the retaining protrusion and the retaining groove, so occurrence of gaps can be done away with. Also, the elastic material having a certain thickness which is applied to the lower plane of the floor material absorbs fine coarseness on the sub-floor material, thereby cooperating with the joining of the above retaining edge plane and engaging plane to do away with offsets and the like.

[0007]

[Embodiments] Next, describing the present invention, reference numeral 1 denotes a rectangular main floor material piece having a constant width, formed of material such as plywood, particle board, MDF, etc., integrally comprising on the one side edge thereof which is the long side thereof a fitting protrusion 2 which is thinner than the thickness of the main floor material piece 1 over the entire length thereof and regarding which the upper surface is flush with the upper surface thereof, and also integrally comprising on the other side edge thereof an upwards-facing fitting groove 3 having a cross-sectional form of the fitting protrusion 2 having been inverted, capable of fitting with the fitting protrusion 2.

[0008]

The fitting protrusion 2 has the tip plane thereof formed as a retaining edge plane 2a made up of a tongue, and a retaining groove having a certain width reaching from the lower plane to near the upper plane is formed on the base edge portion on the one side edge plane of the main floor material piece 1 over the entire length thereof. On the other hand, the fitting groove 3 is formed with a thickness equal to that of the fitting protrusion 2, and the one side wall plane is formed as an engaging plane 3a made up of a tongue capable of fitting to the tip retaining edge plane 2a on the fitting protrusion 2, and further, on the other side edge is provided a retaining protrusion 3b capable of fitting with the above retaining groove 2b. This retaining protrusion 3b is formed slightly thinner than the retaining groove 2b, and forms the other side wall plane of the fitting groove 3 with the inner side plane of the retaining protrusion 3b.

[0009]

Reference numeral 4 is an elastic material formed of rubber, elastic resin sheeting, etc., having a certain thickness which is integrally applied to the lower plane of the main floor material piece 1, which is applied over the entire area from the opening edge of the retaining groove 2b provided at the base edge of the fitting protrusion 2 to the lower plane of the fitting groove 3. Reference numeral 5 is a single-ply facing board

applied onto the upper plane of the main floor material 1, and is applied over then entire area from the upper plane of the fitting protrusion 2 to the opening inner edge of the fitting groove 3.

[0010]

Describing the procedures for installing the floor material thus configured onto the sub-floor material A, first, as shown in Fig. 3, a joist B having a cross-sectional form capable of filling the space below the fitting protrusion 2 of the main floor material piece 1 is fixed at the portion for beginning the laying of the floor, following which the fitting protrusion 2 of the main floor material piece 1 is overlain on the joist B, thereby laying the main floor material piece 1 on the sub-floor material A. Incidentally, laying the main floor material piece 1 on the sub-floor material A is performed by an appropriate adhesive agent being applied to the lower side of the main floor material piece 1, but nails may be driven into the sub-floor material A from the bottom of the fitting groove 3 instead.

[0011]

Following the plurality of main floor material pieces 1 having been installed in a straight line along the joist B, the next row of pieces of floor material are laid along this row of pieces of floor material. Regarding the installation procedures for this, as shown in Fig. 4, the tip of the fitting protrusion 2 is fit into the fitting groove 3 of a main floor



material piece 1 already laid with the fitting protrusion 2 of the main floor material piece 1 tilted downwards, following which the fitting protrusion 2 is pressed forward toward the engaging plane 3a of the fitting groove while the main floor material piece 1 is gradually laid down, thereby bringing the tip retaining edge plane 2a of the fitting protrusion 2 of the main floor material piece 1 into contact with the engaging plane 3a of the fitting groove 3 so as to cause retaining thereof, and also fitting the retaining groove 2b provided to the lower plane of the base edge portion of the fitting protrusion 2 with the retaining protrusion 3b protruding from the other side edge of the fitting groove 3.  
[0012]

Thus linking the main floor material piece 1 to be laid next to the main floor material piece 1 that has already been laid causes both main floor material pieces 1 and 1 to be subjected to restriction of vertical movement by the joining of the tip retaining edge plane 2a of the fitting protrusion 2 and the engaging plane 3a of the fitting groove 3 such that the surface facing boards 5 and 5 form a continuous single plane, and also, the fitting of the retaining groove 3b and retaining protrusion 3b restricts the width direction movement, i.e., the movement in the direction from moving away from each other, so gaps between the main floor material pieces 1 and 1 are done away with and precision installation can be made. Also, the elastic material 4 applied to the lower plane of the main floor material piece

1 absorbs fine coarseness on the surface of the sub-floor material A, and the engaging plane 3a is aggressively pressed against the retaining edge plane 2a due to the elasticity of the elastic material 4, thus enabling offsets to be prevented.

[0013]

Following sequentially applying and installing the main floor material piece 1 to be laid next on the sub-floor material A to the main floor material piece 1 that has already been laid by the above procedures, the third row of main floor material pieces 1 is installed as shown in Fig. 5, and this task is repeated so as to form a floor made up of multiple rows of floor material on the sub-floor 9. Incidentally, during installation, in the state of the fitting protrusion 2 of the main floor material piece 1 to be installed next having been fit into the fitting groove 3 of the main floor material piece 1 row already laid, the main floor material piece 1 can be slid in the lengthwise direction, so as to adjust the position in the lengthwise direction. Also, following installation of the floor, securing the perimeter portion of the floor with baseboards, nails, or the like allows the floor to be completely secured on the sub-floor material A.

[0014]

Fig. 6 illustrates a variation of the fitting groove 3 provided to the main floor material piece 1, and though in the above embodiment the other edge portion of the main floor material piece 1 is formed into the fitting groove 3 using an

appropriate carving tool, in this variation this formation is made using an open-box-shaped material 13 having the same length as the main floor material piece 1. That is, as shown in Fig. 7, the open-box-shaped material 13 is formed of a synthetic resin formed member shaped in the cross-sectional form of a box opening upwards, or hardened resin or a metal formed member with an elastic material layered on the back side thereof, wherein an erected piece 13a erected upwards on the one side edge thereof is fit into a narrow groove 1a engraved in the lower plane of the other side edge portion of the main floor material piece 1, and the other side portion of the open-box-shaped material 13 is left protruding from the width direction of the main floor material piece 1 and is attached in this state, thereby forming the erecting piece erected upwards from the other side edge of the open-box-shaped material 13 as a retaining protrusion 3b, and forming the area between this retaining protrusion 3b and the engaging plane 3a formed on the other side edge plane into the fitting groove 3. Incidentally, the open-box-shaped material 13 is attached such that the lower plane thereof forms a single plane with the lower plane of the elastic material 4. Also, the groove bottom and retaining protrusion 3b of the open-box-shaped material 13 may be formed intermittently as shown in Fig. 8, instead of continuously.

[0015]

Fig. 9 illustrates the tongue-and-groove 2a and 2b of the

main floor material piece 1 formed into a retaining edge plane 21a wherein the tip plane is inclined from the upper plane toward the lower plane in the protruding direction, and an engaging plane 31a inclined at the generally the same angle as that of the retaining edge plane 21a from the upper edge to the lower edge by digging into the main floor material piece 1, thereby forming the retaining edge plane 21a and engaging plane 31a as inclined planes which engage in a plane-contact state. Also, as another variation, tongue-and-groove portions 22a and 23a may be formed on the lower portions of the fitting protrusion 2 and the fitting groove 3 as shown in Fig. 10, instead of the tongue-and-groove portions 2a and 3a being formed at the center portion of the tip plane of the fitting protrusion 2 and the center portion of the inner side wall plane of the fitting groove 3.

[0016]

Also, regarding the open-box-shaped material 13 forming the fitting groove 3, as shown in Fig. 10, a sideways F-shaped form member 33 is used, wherein the lower plane of the horizontal piece portion is adhered next to the elastic material 4 extended from the lower plane of the main floor material piece 1 in the direction of the other side so as to integrate, while a retaining protrusion 3b forming the other side wall plane of the fitting groove 3 is formed with the vertical piece portion. In this case, providing the protrusion 33a which is in contact with the main floor material piece 1 with elastic action causes elastic linking at

the contact plane with the fitting protrusion 2 of the adjacent main floor material piece 1, thus having preferable advantages such as preventing gaps and preventing creaking, and absorbing difference in dimensions, etc. Also, regarding such an elastic member, a separate elastic material 13b may be provided in the recessed portion of the retaining engaging plane 3a of the fitting groove 3 shown in Fig. 6, as shown in Fig. 11.

[0017]

Next, Fig. 12 and Fig. 13 illustrate another embodiment; though rectangular floor material pieces were used in the above embodiment, with this embodiment tongue-and-groove portions 1a, 1b, 1c, and 1d are provided to the four sides of tanzaku-strip-like floor material pieces 1 that have been arrayed en echelon by fitting the opposing tongue-and-groove portions on the long sides with elastic material 4a and 4b applied to the back side, wherein in the longitudinal direction on the back side of the main floor material pieces 1 on both edge are provided a retaining groove 2b on one edge side and a small hole 1a into which the erected edge portion of the open-box-shaped material 13 is fit on the other side, with the elastic material 4a and 4b being situated over the space between. In the present embodiment, the vertical connection portions of the floor members to which fitting protrusions are not provided are formed in a stepped manner and sequentially joined, and thus is advantageous in that gaps and floating do not occur as easily.

[0018]

[Advantages] According to the floor material of the present invention described above, the tip plane at one side edge of the main floor material piece is formed into a retaining edge plane and a fitting protrusion having a retaining groove at the lower plane of the base edge portion is integrally provided, while on the other hand a fitting groove capable of fitting with the fitting protrusion is provided to the other side edge of the main floor material piece and one side wall plane of this fitting groove is formed into an engaging plan capable of engaging with the retaining edge plane and the other side wall portion is formed into a retaining protrusion capable of fitting with the retaining groove, so at the time of installing on sub-floor material, fitting the fitting protrusion portion of the floor material to be laid next into the fitting groove of the floor material already laid causes the retaining plane of the fitting protrusion and the retaining plane of the fitting groove to mutually retain and thus be capable of preventing floating of the floor material, and also, an elastic material is applied to the bottom surface of the main floor material pieces, so that fine roughness on the sub-floor can be absorbed and also the retaining edge plane of the fitting portions is aggressively pressed against the engaging plane of the fitting groove by the elasticity thereof, so adjacent floor material pieces can be precisely joined such that the upper planes thereof form a single plane.

[0019]

Further, the fitting groove provided to the lower plane of the base edge portion of the fitting protrusion fits with the retaining protrusion erected on the other side edge of the main floor material piece already laid down and is thus retained such that slipping in the width direction of the floor material pieces is prevented in a sure manner, thereby enabling gaps to be done away with. Thus, the simple operation of fitting the fitting protrusion of floor material to be laid next into the fitting groove of the floor material already laid restricts the widthwise movement of the floor material by the engaging of the retaining groove and retaining protrusion, and occurrence of offsetting in the thickness direction can be prevented by the engaging of the retaining edge plane and engaging plane due to the elasticity of the elastic material applied to the lower plane of the main floor material pieces, so even in the event that there is some degree of unevenness in the sub-floor material or installation skill, this can be absorbed and precise floor installation can be performed. Also, according to the present invention, a stable floor surface can be finished without fixing using nails or adhesive agents, so installation can be improved without requiring experienced skills.

[Brief Description of the Drawings]

[Fig. 1] Fig. 1 is a perspective view of the floor material according to the present invention.

[Fig. 2] Fig. 2 is an enlarged cross-sectional view thereof.

[Fig. 3] Fig. 3 is a simplified cross-sectional view illustrating the state of floor material installation for the first row.

[Fig. 4] Fig. 4 is a simplified cross-sectional view illustrating the state of floor material installation for the second row.

[Fig. 5] Fig. 5 is a simplified cross-sectional view illustrating the state of floor material installation for the third row.

[Fig. 6] Fig. 6 is a cross-sectional view illustrating another embodiment of the fitting groove.

[Fig. 7] Fig. 7 is a partial perspective view of the open-box-shaped material thereof.

[Fig. 8] Fig. 8 is a perspective view of a variation of the open-box-shaped material thereof.

[Fig. 9] Fig. 9 is a cross-sectional diagram illustrating another form for the retaining edge plane and engaging plane.

[Fig. 10] Fig. 10 is a cross-sectional view of a variation of the open-box-shaped material.

[Fig. 11] Fig. 11 is a cross-sectional view illustrating another structure of the elastic material.

[Fig. 12] Fig. 12 is a rear-side view illustrating another embodiment of the floor material according to the present invention.



[Fig. 13] Fig. 13 is a cross-sectional view along line A-A thereof.

[Reference numerals]

- 1 Main floor material piece
- 2 Fitting protrusion
- 2a Retaining edge plane
- 2b Retaining groove
- 3 Fitting groove
- 3a Engaging plane
- 3b Retaining protrusion
- 4 Elastic material